ORNELL UNIVERSITY ANNOUNCEMENTS

NUTRITION

1959-1961

RADUATE SCHOOL OF NUTRITION

THE ACADEMIC CALENDAR

1959-1960

Sept. 18	F	Freshman orientation
Sept. 21	M	Registration, new students
Sept. 22	T	Registration, old students
Sept. 23	W	Instruction begins, 1 p.m.
Nov. 11	W	Midterm grades due
		Thanksgiving recess:
Nov. 25	W	Instruction suspended, 12:50 p.m.
Nov. 30	M	Instruction resumed, 8 a.m.
		Christmas recess:
Dec. 19	S	Instruction suspended, 12:50 p.m.
Jan. 4	M	Instruction resumed, 8 a.m.
Jan. 23	S	Instruction ends
Jan. 25	M	Second-term registration, students in residence
Jan. 26	T	Examinations begin
Feb. 3	W	Examinations end
Feb. 4	Th	Midyear recess
Feb. 5	F	Midyear recess
Feb. 6	S	Registration, students not in residence in fall term
Feb. 8	M	Second-term instruction begins
Mar. 26	S	Midterm grades due
		Spring recess:
Mar. 26	S	Instruction suspended, 12:50 p.m.
Apr. 4	M	Instruction resumed, 8 a.m.
May 28	S	Instruction ends
May 30	M	Examinations begin
June 7	T	Examinations end
June 13	M	Commencement Day

GRADUATE SCHOOL OF NUTRITION

1959–1960 and 1960–1961

The Graduate School of Nutrition, a Unit of Cornell University, is Supported in Part by State Appropriations through the State University of New York

CORNELL UNIVERSITY ANNOUNCEMENTS

Published by Cornell University at Edmund Ezra Day Hall, 18 East Avenue, Ithaca, New York, every two weeks throughout the calendar year. Volume 50. Number 17. Feb. 11, 1959. Second-class mail privileges authorized at the post office at Ithaca, New York, December 14, 1916, under the act of August 24, 1912.

CONTENTS

FACULTY

ADMINISTRATION

Deane W. Malott, A.B., M.B.A., LL.D., D.C.S., *President of the University*
Sanford S. Atwood, Ph.D., *Provost of the University*
Richard H. Barnes, Ph.D., *Dean of the School*
Charlotte M. Young, Ph.D., *Secretary of the School*

INSTRUCTION AND RESEARCH

Robert C. Baker, Ph.D., *Associate Professor (Poultry Husbandry)*
LeRoy L. Barnes, Ph.D., *Professor (Biophysics)*
Richard H. Barnes, Ph.D., *Professor (Nutrition)*
Kenneth C. Beeson, Ph.D., *Professor (Soil Science)*
Alice M. Briant, Ph.D., *Professor (Food and Nutrition)*
Louise J. Daniel, Ph.D., *Professor (Biochemistry and Nutrition)*
C. Douglas Darling, M.D., *Professor (Clinical Medicine)*
Herrell F. DeGraff, Ph.D., *Babcock Professor (Food Economics)*
Robert W. Dougherty, D.V.M., *Professor (Veterinary Physiology)*
Henry H. Dukes, Ph.D., *Professor (Veterinary Physiology)*
Joseph A. Dye, Ph.D., *Professor (Veterinary Physiology)*
Faith Fenton, Ph.D., *Professor (Food and Nutrition)*
Grace Fiala, A.B., *Research Associate (Nutrition)*
Robert K. Finn, Ph.D., *Associate Professor (Chemical Engineering)*
Jeffrey H. Fryer, M.D., *Associate Professor (Medical Nutrition)*
David B. Hand, Ph.D., *Professor (Biochemistry)*
Elisabeth H. Harmuth, Ph.D., *Research Associate (Nutrition)*
John D. Hartman, Ph.D., *Professor (Vegetable Crops)*
Hazel M. Hauck, Ph.D., *Professor (Food and Nutrition)*
Barbour L. Herrington, Ph.D., *Professor (Dairy Chemistry)*
Frederic W. Hill, Ph.D., *Professor (Animal Nutrition)*
Robert W. Holley, Ph.D., *Associate Professor (Biochemistry and Nutrition)*
George J. Hucker, Ph.D., *Professor (Bacteriology)*
Frances A. Johnston, Ph.D., *Professor (Food and Nutrition)*
Morley R. Kare, Ph.D., *Associate Professor (Veterinary Physiology)*
Zoltan I. Kertesz, Ph.D., *Professor (Chemistry)*

Savage Hall, the home of the Graduate School of Nutrition.

Eva H. Kwong, Ph.D., *Research Associate (Nutrition)*
Frank A. Lee, Ph.D., *Associate Professor (Chemistry)*
Karla Longrée, Ph.D., *Professor (Institution Management)*
John K. Loosli, Ph.D., *Professor (Animal Nutrition)*
Ruth N. Lutz, Ph.D., *Assistant Professor (Food and Nutrition)*
Nancy K. Masterman, M.S., *Editor (Nutrition)*
Leonard R. Mattick, Ph.D., *Assistant Professor (Food Science)*
Leonard A. Maynard, Ph.D., *Professor Emeritus (Nutrition and Biochemistry)*
Clive M. McCay, Ph.D., *Professor (Nutrition)*
Nell Mondy, Ph.D., *Associate Professor (Food and Nutrition)*
Norman S. Moore, M.D., *Professor (Clinical Medicine)*
James C. Moyer, Ph.D., *Professor (Chemistry)*
Edward A. Nebesky, Ph.D., *Associate Professor (Food Technology)*
Walter L. Nelson, Ph.D., *Professor (Biochemistry)*
Leo C. Norris, Ph.D., *Professor (Nutrition)*
Carl S. Pederson, Ph.D., *Professor (Bacteriology)*
Catherine J. Personius, Ph.D., *Professor (Food and Nutrition)*
Willard B. Robinson, Ph.D., *Professor (Chemistry)*
Milton L. Scott, Ph.D., *Professor (Animal Nutrition)*
Harry W. Seeley, Jr., Ph.D., *Professor (Bacteriology)*
Robert S. Shallenberger, Ph.D., *Assistant Professor (Biochemistry)*
Ora Smith, Ph.D., *Professor (Vegetable Crops)*
Sedgwick E. Smith, Ph.D., *Professor (Animal Husbandry)*
Robert M. Smock, Ph.D., *Professor (Pomology)*
Robert G. D. Steel, Ph.D., *Associate Professor (Biological Statistics)*
Grace Steininger, Ph.D., *Professor (Food and Nutrition)*
John Summerskill, Ph.D., *Associate Professor (Clinical Psychology)*
Kenneth L. Turk, Ph.D., *Professor (Animal Husbandry)*
Jerome P. VanBuren, Ph.D., *Assistant Professor (Biochemistry)*
Austin C. Wagenknecht, Ph.D., *Associate Professor (Biochemistry)*
Richard G. Warner, Ph.D., *Associate Professor (Animal Husbandry)*
George H. Wellington, Ph.D., *Professor (Animal Husbandry)*
Harold H. Williams, Ph.D., *Professor (Biochemistry)*
Donald E. Wilson, Ph.D., *Assistant Professor (Food Science)*
Lemuel D. Wright, Ph.D., *Professor (Nutrition)*
Charlotte M. Young, Ph.D., *Professor (Medical Nutrition)*

THE GRADUATE SCHOOL OF NUTRITION

THE GRADUATE SCHOOL OF NUTRITION was established at Cornell University to meet the enlarged and diversified needs of the many fields in which a thorough knowledge of food and nutrition and their underlying sciences has become of importance. The program of the School offers an opportunity for the study of problems in food technology and economics and in food supply and distribution. Its curricula provide also for the training of research workers and teachers in nutrition, both human and animal, and for nutritionists in public health and institutional work.

COMMUNITY ORGANIZATION AND FACILITIES

In the Graduate School of Nutrition various colleges of the University cooperate to provide an integrated program of research and teaching in Nutrition and Food Science. The School is administered by a board consisting of the President, the Provost, the Deans of the Colleges of Agriculture, Arts and Sciences, Engineering, Home Economics, and the Medical College, and the Dean of the School. It is supported by a state appropriation through the State University of New York, by endowed funds of the University, and by grants from various sources.

The School, housed in a modern building, is equipped for teaching and research. The facilities include biochemical, microbiological, physiological, and food laboratories, air-conditioned rooms for small animal studies, a metabolic laboratory and several laboratories equipped for specific purposes. In addition, the well-equipped laboratories and other facilities of the cooperating colleges are available for studies of both human and animal nutrition. The Department of Clinical and Preventive Medicine of the University offers opportunity for studying the clinical aspects of nutrition. The United States Plant, Soil, and Nutrition Laboratory provides unusual opportunity for studying the relation of production and processing of food crops to their nutritive value. The Department of Food Science and Technology at the New York State Agricultural Experiment Station, Geneva, N.Y., provides facilities for acquaintance with diverse food problems that are under investigation.

CURRICULUM AND DEGREES

The Graduate School of Nutrition offers a curriculum providing for specialization in either nutritional science or food science. Its degrees of Master of Nutritional Science and Master of Food Science are awarded by the Cornell Graduate School.

The professional degrees, the Master of Nutritional Science and the Master of Food Science, are planned as terminal degrees awarded after satisfactory completion of a prescribed core of courses considered basic to an understanding of nutritional and food science at the Master's level, regardless of the field of special interest. In addition, specially chosen electives prepare each student for the field of his choice. The degrees represent a defined accomplishment in the area of nutritional science or food science.

The candidate for a degree prepares a report representing 6 to 10 semester hours credit based on his original research of a special problem. The special problem report is of thesis calibre.

The curriculum completed for the M.N.S. and M.F.S. degrees establishes an excellent background for advanced study. Students who have obtained these degrees frequently continue studies leading to the Ph.D. in such fields as biochemistry, food science and technology, animal nutrition, or food and nutrition.

ADMISSION

To be admitted to the School the applicant must hold a baccalaureate degree from a college or university of recognized standing or have done work equivalent to that required for such a degree. He must have a definite professional interest in the field of either nutritional science or food science. In order to qualify as a candidate for one of the graduate degrees, his training must include the completion, with a superior record, of courses in the following subjects, with the approximate number of semester hours as stated.

COURSE REQUIREMENTS

PHYSICAL SCIENCES—20 HOURS

Chemistry, physics, mathematics. Courses in quantitative chemistry and organic chemistry are prerequisites to courses required for graduation. If they are not offered for entrance, they must be taken following admission. Students who enter without college training in physics are required to take an elementary course in this subject before graduation. Credits for beginning courses in physics and chemistry, including organic and quantitative analysis, cannot be counted toward graduation.

BIOLOGICAL SCIENCES

Biology, botany, zoology, bacteriology, physiology.

For candidates for the M.N.S. degree—12 hours:

Courses in animal or human nutrition up to three hours may be counted in the biological sciences. Elementary courses in bacteriology or physiology cannot be counted toward graduation.

For candidates for the M.F.S. degree—8 hours:

Elementary courses in bacteriology cannot be counted toward graduation. However, an elementary course in bacteriology is prerequisite for advanced courses in bacteriology.

SOCIAL STUDIES—9 HOURS

Suggested subjects are economics, government, education, psychology, sociology, anthropology, and history.

OTHER COURSES

The applicant's record must show evidence that he has satisfactorily completed other courses prerequisite to those required by a candidate for a degree. An applicant who cannot meet in full the specific course requirements may be admitted if the faculty of the School so recommends, with the understanding that the deficiencies must be made up before graduation.

NONCANDIDATES

Admission as noncandidates is open to applicants who desire to register for a term or more to take specific courses but who do not wish to become candidates for a degree. Such applicants must hold Bachelors' degrees, must meet the other requirements specified for admission, and must show evidence that the courses desired will be of special benefit to them in their professional careers.

UNIVERSITY REQUIREMENTS

Applicants must meet the general requirements for admission to the Graduate School as set forth in the Announcements of *General Information* and of the *Graduate School.*

Each entering student is expected to assume personal responsibility for the following health requirements adopted by the trustees of Cornell University. All health requirements pertaining to the previous semester must be fulfilled before permission is granted to register for a new semester.

IMMUNIZATION

A satisfactory certificate of immunization against smallpox must be submitted before registration on the form supplied by the University. It will be accepted as satisfactory only if it certifies that a successful vaccination has been performed within the last three years. If this requirement cannot be fulfilled by the student's home physician, opportunity for immunization will be offered by the Cornell medical staff during the student's first semester, the cost to be borne by the student.

HEALTH HISTORY

Students accepted for admission will be required to submit health histories on forms supplied by the University.

X-RAY

Every student is required to have a chest X-ray. He may present a chest film, made by a private physician, on or before entering Cornell, provided that it was obtained within six months of initial registration and is of acceptable quality; *or* he may present a chest X-ray report, provided that the radiograph was taken within the six months of initial registration and contains the film number, name and address of the X-ray facility, and is signed by a radiologist; *or* he may obtain the chest X-ray at Cornell during the registration period or during his first semester (in which case, the charge, covering also any necessary recheck films, will be included in the general University fee).

The health history and X-ray requirements will need to be met again when a student has been away from the University for more than a year.

REGISTRATION AND APPLICATIONS

All students admitted to the Graduate School of Nutrition must register through the Graduate School Office, 125 Day Hall, at the beginning of each term or session.

Applicants for admission should address their inquiries to the Office of the Graduate School, Cornell University, Ithaca, N. Y. No application will be acted upon until all credentials enumerated in the application form have been filed.

REQUIREMENTS FOR GRADUATION

The requirements for graduation call for the completion of at least two units of residence and the completion of at least 36 semester hours of specified and approved courses of which not more than 10 can be in research (Graduate School of Nutrition 199). In the event that certain required courses have been completed satisfactorily by the student

prior to his admission to the Graduate School, substitutions will be made with the approval of his faculty adviser.

Certain elective courses may be required as deemed appropriate by the adviser and the faculty of the Graduate School of Nutrition to round out the student's professional training in nutritional science or food science. The student must prepare a written report on an approved problem that may or may not require laboratory research, and must pass a final examination. The curriculum differs in accordance with the field in which the student wishes to specialize, as follows:

A. NUTRITIONAL SCIENCE

The specialized training in this field, leading to the degree of Master of Nutritional Science, emphasizes the basic scientific knowledge and techniques of nutrition. The completion of the following curriculum is required:

	Hours		*Hours*
General Biochemistry	6	History of Nutrition	1
Principles of Nutrition	3	Seminars	1
Laboratory work in nutrition	3	Advanced courses in human or animal nutrition	4
Advanced Physiology	6	Special problem	6 to 10
Food Economics	3		
Statistics	3		

In addition, the requirements include such approved electives as the faculty adviser and the faculty of the School may deem appropriate and necessary to round out the student's training in the field of nutritional science.

Faculty advising students for the M.N.S. degree include: Professors L. L. Barnes, R. H. Barnes, K. C. Beeson, L. J. Daniel, R. W. Dougherty, H. H. Dukes, J. A. Dye, J. H. Fryer, H. M. Hauck, F. W. Hill, R. W. Holley, F. A. Johnston, M. R. Kare, J. K. Loosli, R. N. Lutz, C. M. McCay, N. S. Moore, W. L. Nelson, M. L. Scott, S. E. Smith, G. Steininger, K. L. Turk, R. G. Warner, H. H. Williams, L. D. Wright, C. M. Young.

B. FOOD SCIENCE

The specialized training in this field, leading to the degree of Master of Food Science, emphasizes the sciences involved in food processing and utilization. The completion of the following curriculum is required:

	Hours		*Hours*
General Biochemistry	6	Statistics	3
Advanced courses in bacteriology	6	Nutrition	3
Advanced approved courses in food science	11	Seminars	1
		Special problem	6 to 10

In addition, the requirements include such approved electives as the faculty adviser and the faculty of the School may deem appropriate and necessary to round out the student's training in the field of food science.

Faculty advising students for the M.F.S. degree include: Professors R. C. Baker, R. H. Barnes, A. M. Briant, R. K. Finn, D. B. Hand, J. D. Hartman, B. L. Herrington, G. J. Hucker, Z. I. Kertesz, F. A. Lee, K. Longrée, L. R. Mattick, N. Mondy, J. Moyer, E. A. Nebesky, W. L. Nelson, C. S. Pederson, C. J. Personius, W. B. Robinson, H. W. Seeley, R. S. Shallenberger, O. Smith, R. M. Smock, J. P. VanBuren, A. C. Wagenknecht, G. H. Wellington, D. E. Wilson, L. D. Wright.

COURSES APPROVED FOR ADVANCED NUTRITION CREDIT

F.N. 324. Nutrition ..... 3 hours*
F.N. 330. Diet Therapy ..... 3 hours
F.N. 440. Nutrition of Growth and Development ..... 2 hours
F.N. 400. F.N. 401. Readings in Nutrition ..... 2 hours each
P.H. 210. Advanced Poultry Nutrition ..... 2 hours
C.P.M. 392. Clinical and Public Health Nutrition ..... 3 hours
C.P.M. 381. C.P.M. 382. Field Observation and Experience in Community Nutrition ..... 1 hour each
Bio. 150. Biochemistry and Nutrition of the Vitamins ..... 2 hours
Bio. 220. Special Topics in Biochemistry and Nutrition ..... 1 hour†

COURSES APPROVED FOR FOOD SCIENCE

F.N. 314. Science in Food Preparation ..... 3 hours
F.N. 315. Science in Food Preparation; Introductory Experimental Cookery ..... 3 hours
F.N. 403. Special Problems for Graduate Students ..... ‡
F.N. 404. Readings in Foods ..... 2 hours
Food Sci. & Tech. 101. Principles of Food Technology ..... 3 hours
Eng. 5110. Elementary Chemical Engineering ..... 3 hours
D.I. 102. Market Milk ..... 5 hours
D.I. 111. Analytical Methods ..... 4 hours
D.I. 113. Chemistry of Milk ..... 2 hours
D.I. 103. Milk-Products Manufacturing ..... 5 hours
D.I. 104. Milk-Products Manufacturing ..... 5 hours
D.I. 108. Commercial Grades of Dairy Products ..... 1 hour

*If equivalent not previously taken.
†Depending on the topic.
‡Credits as arranged.

D.I. 130. Dairy and Food Engineering .....4 or 5 hours
Pomology 111. Post-Harvest Physiology, Handling & Storage of Fruits .....3 hours
Veg. Crops 22. Potato Production and Processing .....3 hours
Veg. Crops 112. Handling Vegetable Crops, Advanced course 4 hours
Bio. 140. Selected Topics in Food Biochemistry .....2 hours
Bio. 150. Biochemistry and Nutrition of the Vitamins.....2 hours
Bio. 201. Biochemistry of Lipids and Carbohydrates .....2 hours
Bio. 202. Biochemistry of Proteins and Enzymes .....2 hours
Hotel. Adm. 206. Meats, Poultry and Fish .....3 hours
Ag. Econ. 159. Food Economics .....3 hours
Ag. Econ. 250. Seminar in Food and Population .....2 hours
An. Hus. 90. Meat and Meat Products .....3 hours
An. Hus. 92. Meat and Meat Products .....2 hours

SPECIAL PROBLEM

The work involved in the report on an individual problem required for both degrees may be carried out with the approval of the student's faculty adviser under the direction of any member of the faculty of the School whom the student may choose and who is willing to supervise it.The report must be approved by the supervising faculty member and the original copy submitted to the Office of the Dean of the Graduate School of Nutrition at least one week prior to the beginning of the final examination period. Directions concerning the form in which the report is to be presented may be obtained either from the student's faculty adviser or from the Office of the Dean of the Graduate School of Nutrition.

EXAMINATION

A final examination, either oral or written or both, is required for either degree. Examinations are conducted by a committee consisting of the faculty adviser plus one other member to be designated by the faculty of the Graduate School of Nutrition or its delegated agent.

TRAINING FOR SPECIALIZED FIELDS

FOOD SCIENCE

Careers in food production, research, quality control, and technical sales work are open to the M.F.S. graduates. The need for trained men and women in this field is rapidly increasing because of the advances in the science of nutrition, technological progress in food processing methods, and the problems of world-wide food and feed supplies and distribution.

For the M.F.S. degree, the fundamental sciences are emphasized: chemistry, biochemistry, and bacteriology. From the broad coverage of academic subjects on the Cornell Campus, electives are available to meet individual needs in economics, marketing, business administration, and many other fields.

It is the feeling of the faculty of the Graduate School of Nutrition that the student who has mastered basic sciences can learn special food techniques on the job. Basic academic training, therefore, does not have to include specialized technological courses in food processing and packaging.

The student is encouraged to have practical experience in a food processing plant prior to the completion of his studies. The work on an individual problem may be carried on either at the Ithaca campus or at the New York State Agricultural Experiment Station at Geneva, N. Y. Members of the Department of Food Science and Technology there, who also serve as members of the Graduate School of Nutrition faculty, advise students on their special problems and help acquaint them with the diverse food problems that are under investigation in the Experiment Station laboratories.

NUTRITIONAL SCIENCE

Many fields are open to graduates with the M.N.S. degree. Research and teaching positions in universities and employment in commercial research laboratories are among the opportunities. Certain graduates are prepared for the field of public health nutrition. Foreign students receive a training useful in many teaching and governmental positions in their home countries.

The basic training for the M.N.S. degree emphasizes the physical and biological sciences and the principles of nutrition of all species. Through appropriate electives, students learn to apply these disciplines in either human or animal nutrition. Facilities for research include biochemical, microbiological, and physiological laboratories, experimental animal quarters, a diet table for experimental work in human nutrition, a metabolic unit in the Cornell Infirmary for the study of nutrition in relation to disease, and often opportunity to participate in surveys.

Special opportunities are provided for students of appropriate background who are interested in preparing themselves for work as community nutritionists with health and welfare agencies. Here, the approved electives will include certain phases of social science, the elements of public health, clinical and public health nutrition, and appropriate informational service techniques. Opportunities for supervised experiences with community and health agencies are available for selected students. Students accepted for training in this area must

plan financially for three to four weeks of residence away from Cornell to cover the field experience. Two weeks will be in the fall just prior to the academic year; the third and possible fourth week may be either during the spring recess or immediately following final examinations. In addition, suitable students are urged to spend a two months' period in the summer in "in-service" training in nutrition as applied to the community and to public health. Help will be given in making the necessary contacts. These opportunities will provide assignments which can be used as the basis for meeting the requirement for a report on an individual problem.

Students with interest in the feed industry should have completed reasonably broad training in livestock production, including poultry, prior to admission. The training will stress principles of animal nutrition, animal physiology, experimental methods, and analytical procedures. To round out the training, courses in food economics, marketing, and business administration are provided.

RESIDENCE REQUIREMENTS

A student must complete at least two terms of residence after receiving the Bachelor's degree from Cornell or elsewhere to receive a degree from the School. A student who holds a teaching or research assistantship involving a significant loss of time from his course work will not be given full residence credit. Assistants whose duties call for approximately twenty hours of work weekly will receive three-fourths of residence credit a term. In other cases the amount of deduction will be determined by the General Committee of the Graduate School on recommendation of the faculty of the Graduate School of Nutrition.

CREDIT FOR WORK DONE IN THE SUMMER

A student registered in the School may receive credit for work done in the University Summer Session if his program is approved in advance by his faculty adviser. To receive this credit he must also be registered in the Summer Session.

A student who has been registered in the School for one term after receiving his Bachelor's degree may, with the approval of his faculty adviser, register for a minimum of four and a maximum of twelve weeks for work in the summer on his individual problem under personal direction of a member of the faculty of the School and thus earn residence credit. The student can thus make use of the summer period to meet, in whole or in part, the requirements of six to ten hours granted upon the completion of his report on an approved problem.

TUITION AND FEES

A registration deposit of $28 must be made by every applicant accepted for admission unless the candidate has previously matriculated as a student at Cornell University. A check or money order payable to Cornell University should be remitted to the Graduate School, 125 Day Hall, upon notification of acceptance by the Graduate School of Nutrition. This deposit pays the matriculation fee, chest X-ray fee, and examination blank charge and covers certain expenses incident to graduation if the student receives a degree.

Limited refunds of tuition and fixed fees will be made to students who withdraw from the University, prior to the completion of a term, for reasons accepted as satisfactory. For students who do not complete a term, tuition and other fees will be charged at the rate of 10 per cent for each week, or fraction of a week, from the first day of registration to the date of withdrawal as certified by the School; however, if withdrawal is made within six days of the date of registration, no charge is assessed. The registration deposit will not be refunded.

The tuition for students registered in the Graduate School of Nutrition is $150 a term payable at the beginning of each term. Certain assistantships carry a partial waiver of tuition.

A College and University Fee of $112.50 a term payable at the beginning of each term is required of each registrant of the Graduate School of Nutrition whether he is receiving full residence credit or not. This general fee contributes toward the services supplied by the libraries, Clinic and Infirmary, and the student union in Willard Straight Hall, and pays a portion of the extra cost of laboratory courses and general administration.

Students of the Graduate School of Nutrition who attend classes in the Summer Session must register both in the Graduate School and in the Summer Session and pay the tuition and other fees required by the Summer Session.

Any tuition fee or other fee may be changed by the University Trustees to take effect at any time without previous notice.

GRADUATE ASSISTANTSHIPS, SCHOLARSHIPS, AND FELLOWSHIPS

GRADUATE ASSISTANTSHIPS

Graduate assistantships in the Graduate School of Nutrition are available for a limited number of students. These assistantships are established to provide financial assistance to outstanding graduate students and at the same time to provide the Graduate School of Nutrition

with qualified technical personnel to aid in the various research programs. The salary for an assistantship is at the rate of $1575 for nine months, with a waiver of a major portion of the tuition. The usual period runs from September 15 to June 15. With certain research projects this term may be extended to twelve months with appropriate salary adjustment.

Applications for graduate assistantships should be submitted directly to the Graduate School of Nutrition, Savage Hall, not later than March 1. Announcement of September appointments will be made on or about April 1.

Graduate assistantships for students in the Food Science program are available in many departments, in addition to the Graduate School of Nutrition. Departments cooperating in the Food Science program are: Dairy Industry, Pomology, Vegetable Crops, Animal Husbandry, Poultry Husbandry, Food and Nutrition, and Food Science and Technology at the New York State Agricultural Experiment Station, Geneva. Applications for assistantships may be made by writing directly to any of the listed departments, or to the Secretary, Graduate School of Nutrition, Savage Hall, Ithaca, New York.

Residence credit for holders of these graduate assistantships is limited to three-fourths of a unit each term. The student must pay all fees required by the Graduate School.

FELLOWSHIPS AND SCHOLARSHIPS

A limited number of tuition scholarships and fellowships are available to students in the Graduate School of Nutrition. These include a number of national fellowships. Application should be made directly to the Office of the Graduate School, 125 Edmund Ezra Day Hall, Cornell University, not later than February 14.

PUBLIC HEALTH TRAINEESHIPS FOR PUBLIC HEALTH PERSONNEL

Students interested in preparing for positions as public health nutritionists may apply for public health traineeship awards from the Public Health Service. Applicants for such individual traineeships may secure application forms and additional information from any of the Regional Medical Directors of the United States Public Health Service or from the Chief, Division of General Health Services, Bureau of State Services, Public Health Service, U.S. Department of Health, Education and Welfare, Washington 25, D.C.

ADVISORY SERVICE FOR STUDENTS PREPARING AT CORNELL TO ENTER THE SCHOOL

Students in the Colleges of Agriculture, Arts and Sciences, or Home Economics at Cornell University, who prepare for admission to the Graduate School of Nutrition, may be advised during the period of preparation by members of the faculty of the School who are also members of the faculty of the college in which the students matriculate.

Undergraduates who are interested in nutrition and who are matriculating at Cornell University for the first time should state upon the application for admission that nutrition is the business or profession (field of work) in which they expect to enter, upon completion of their studies. This is necessary in order that appropriate faculty advisers may be assigned to them.

HEALTH SERVICES AND MEDICAL CARE

The health services and medical care of Cornell students are centered in the Gannett Medical Clinic (the out-patient department) and in the Cornell Infirmary (hospital). Students may consult a physician at the Clinic whenever need arises and receive treatment in cases that do not require hospitalization. If hospital care is indicated, the student is requested to enter the Infirmary. For details of the health and medical services covered by the student's College and University General Fee, see the *Announcement of General Information*. Insurance is available on a voluntary basis to supplement the services provided by the general fee; information about such insurance may be obtained at the Gannett Medical Clinic.

GRADUATE STUDENT HOUSING

University dormitory housing is available to single graduate students upon application to the Department of Residential Halls, 223 Edmund Ezra Day Hall. Married graduate students may apply to the Manager of Housing, Department of Residential Halls, for University-operated housing. Applications for all University housing should be made as soon as possible after January 1 for fall matriculants; after October 1 for spring matriculants. Detailed information concerning University housing may be obtained by writing to the Department of Residential Halls.

Rooms and apartments adjacent to the campus or in the downtown area are available in limited number. Students desiring off-campus housing should arrange to come to Ithaca well in advance of the term opening to arrange such accommodation. Inquiries may be directed to the Department of Residential Halls.

MILITARY SCIENCE AND TACTICS

The third and fourth years of military science and tactics (Advanced ROTC) are elective and qualify a student for appointment as a Second Lieutenant in the U.S. Army Reserve or the Regular Army. These courses are open to graduate students who have satisfactorily completed a basic course in ROTC while undergraduates and who are enrolled in a two-year graduate program leading to a degree. Interested graduate students should apply to the Professor of Military Science and Tactics, Barton Hall, for further information. See the *Announcement of Independent Divisions and Departments* for additional details and specific courses offered.

DESCRIPTION OF COURSES

THE FOLLOWING LIST OF COURSES includes both those previously specified as required for the degrees offered and some of those from which electives may be selected, with the approval of the student's faculty adviser, in accordance with his specific field of interest.

The information in parentheses following the name and the course refers to the college in which the course is given, the department, and the course number. In registering for any of these courses the information shown in the parentheses should be given rather than the name of the course. In some instances the time and place are not given in the descriptive material enclosed in the parentheses following the title of the course. To obtain this information the student should consult the specific departmental office or the individual Announcements issued by the colleges concerned.

For courses marked with an asterisk (*), "advanced nutrition" credit may be given. For those marked with a dagger (†), "advanced food science" credit may be given.

NUTRITION

PRINCIPLES OF ANIMAL NUTRITION. (Agriculture; Animal Husbandry 110.) Fall. Credit three hours. For seniors and graduate students. Prerequisites, a course in human or veterinary physiology and a course in organic chemistry or biochemistry. Lectures, M W F 10. Wing C. Professor LOOSLI.

The chemistry and physiology of nutrition and the nutritive requirements for growth, reproduction, lactation, and other body functions.

LABORATORY WORK IN ANIMAL NUTRITION. (Agriculture; Animal Husbandry 111.) Fall or spring. Credit three hours. Prerequisites, Quantitative Analysis, course 110 or its equivalent, and permission of the instructor. Class limited to 18 students each term. M W F 2–4:20. Stocking 160. Fall, Professor McCAY and assistants. Spring, Associate Professor WARNER and assistants.

Each student engages in a series of short research projects with experimental animals, such as rats, dogs, and sheep. Both classical and modern techniques of animal experimentation are taught. The application of biochemical methods to the solution of animal nutrition problems is included.

NUTRITION. (Home Economics; Food and Nutrition 324.) Spring. Credit three hours. Prerequisites, elementary college courses in nutrition, biochemistry, and human physiology (for Home Economics students: Food and Nutrition 103, Human Physiology 303, or Zoology 201, and Biochemistry 10; other students should see the instructor about equivalent preparation). Discussion, T Th 8, Van Rensselaer 339. Laboratory, F 2–4 or M 2–4, Van Rensselaer 426. Professor HAUCK and Assistant Professor NEWMAN.*

Principles of nutrition as they relate to energy metabolism and weight control, hygiene of the digestive tract, proteins, minerals, and vitamins. Application of the principles of nutrition to needs of normal individuals. During and as a result of this course the student is expected to establish and maintain good nutrition practices.

MATERNAL AND CHILD NUTRITION. (Home Economics; Food and Nutrition 340.) Fall or spring. Credit two hours. Prerequisite, Food and Nutrition 103 or 190. Not open to students who have taken Food and Nutrition 324. Majors in the department may elect this course as sophomores. Nonmajors must have junior or senior standing. Lecture and discussion. W F 8. Van Rensselaer 339. Assistant Professor NEWMAN.

Family nutrition with special emphasis upon the nutritional needs of the mother and child. Relation of nutrition to physical growth and development.

NUTRITION OF GROWTH. (Home Economics; Food and Nutrition 440.) Fall. Credit two hours. Prerequisite, Food and Nutrition 324 or equivalent. T Th 9. Van Rensselaer 301. Assistant Professor NEWMAN.*

Relation of nutrition to growth and development from the prenatal period to adulthood. A study of research literature.

HISTORY OF NUTRITION. (Agriculture; Animal Husbandry 215.) Fall. Credit one hour. Th 4:15. Savage 130. Professor McCAY.

The purpose of the course is to familiarize the student with the background literature in nutrition and to improve his technique in using the libraries. Each student prepares four written reports and summarizes these in brief oral reports to learn better ways to present technical information.

SPECIAL TOPICS IN BIOCHEMISTRY AND NUTRITION. (Agriculture; Biochemistry and Nutrition 220.) Spring. Credit one hour. Primarily for graduate students. Prerequisite, a course in biochemistry. Registration by permission. T 8. Savage 145. Professor WILLIAMS.

[*ADVANCED POULTRY NUTRITION.* (Agriculture; Poultry Husbandry 210.) Spring. Credit two hours. For graduate students. Not given every year and not unless ten or more students apply for the course. Registration by appointment. Discussion and laboratory period. Th 2–4. Rice 201. Professor SCOTT. Not offered in 1959–1960.*

A study of one or more important fields of research in poultry nutrition, a critical consideration of the experimental methods used in conducting the investigations, and discussion of further studies needed, including the planning of the experiments.]

READINGS IN NUTRITION. (Home Economics; Food and Nutrition 400.) Spring. Credit two hours. Offered in alternate years. Prerequisite, Food and Nutrition 324 or equivalent. T Th 11. Van Rensselaer 301. Professor HAUCK.*

Critical review of literature in the field of vitamin and mineral metabolism, with emphasis on the experimental data on which the principles of human nutrition are based.

[*READINGS IN NUTRITION.* (Home Economics; Food and Nutrition 401.) Spring. Credit two hours. Offered in alternate years. Prerequisite, Food and Nutrition 324 or equivalent. T Th 11. Van Rensselaer 301. Professor HAUCK.*

Critical review of literature relating to energy metabolism, proteins, fats, and carbohydrates, with emphasis on the experimental data on which the principles of human nutrition are based. Not offered in 1959–1960.]

SEMINAR IN ANIMAL NUTRITION. (Agriculture; Animal Husbandry 219.) Fall. Credit one hour. Open to graduate students with major field of study in animal nutrition. Registration by permission. M 4:30. Rice 300. Animal Nutrition staff.

A critical review of the literature and other topics of special interest to graduate students in animal nutrition.

NUTRITION SEMINAR. (Agriculture; Biochemistry and Nutrition 292.) Spring. Credit one hour. Registration by permission. M 4:15. Savage 100. Professor BARNES and staff.

Assignments and discussions of recent advances in the biochemistry and physiology of nutrition.

SEMINAR IN NUTRITION. (Home Economics; Food and Nutrition 420.) Fall. Credit one hour. T 4:30. Van Rensselaer 301. Department staff.

CLINICAL AND PUBLIC HEALTH NUTRITION. (Clinical and Preventive Medicine 392.) Spring. Credit three hours. Prerequisites, a course in nutrition, in physiology, and in biochemistry. Registration by permission of the instructor. For Graduate School of Nutrition and Graduate School students only. M W F 10. Savage 145. Professor YOUNG and members of the medical staff.*

This course is designed to familiarize the student with some of the applications of nutrition to clinical and public health problems.

FIELD OBSERVATION AND EXPERIENCE IN COMMUNITY NUTRITION. (Clinical and Preventive Medicine 381–382.) Throughout the year. Credit one hour (a term). Prerequisites (or in conjunction with) CPM 392 and Engineering 2509. Registration by permission only. For Graduate School of Nutrition and Graduate School students only. A two-week full-time field period just prior to the academic year and one to two weeks during the spring recess and/or immediately following final examinations in the spring term. Time and place as arranged. Visiting Assistant Professor ——— and Professor YOUNG.*

Supervised observation and experience in community nutrition programs. Students must be prepared to defray expense of living costs in the communities selected for the field experience. Every effort will be made to keep costs minimal.

DIET THERAPY. (Home Economics; Food and Nutrition 330.) Fall. Credit three hours. Prerequisite, Food and Nutrition 324 or equivalent. Discussion, M W F 9. Van Rensselaer 426. Professor HAUCK.*

Diet in febrile diseases, diabetes, gastrointestinal disturbances, and other conditions. Experiences in independent use of journal literature in this field.

NUTRITION AND HEALTH. (Home Economics; Food and Nutrition 190.) Fall. Credit two hours. Intended for students who have had no previous college course in human nutrition. Not to be elected by students who take Food and Nutrition 103 or 104. T Th 9. Van Rensselaer 426. Professor HAUCK.

The relationship of food to the maintenance of health; its importance to the individual and society.

PUBLIC HEALTH

PUBLIC HEALTH (Engineering 2509.) Spring. Credit three hours. Lecture-discussions, reports and field trips. M W F 9.

An introduction to public health principles and practice, including the nature and the activities of local, state, and national public health organizations. Environmental sanitation, with emphasis on air sanitation; food sanitation; and water sanitation, including municipal and rural water supply and waste disposal methods.

FOOD SCIENCE

PRINCIPLES OF FOOD TECHNOLOGY. (Agriculture; Food Science and Technology 101.) Throughout the year. Credit three hours a term. Prerequisites, Chem-

istry 102 or 106, Bacteriology 1, Physics 104. Fall term: T Th 10, Riley-Robb 205; laboratory, Th 2–4:30, Riley-Robb 147A. Spring term: M W 11, Riley-Robb 125; laboratory, Th 2–4:30, Riley-Robb 147A. Associate Professor NEBESKY.†

Outlines the broad field of food economics, the processing, production, and distribution of raw material to finished product, with emphasis on canning, freezing, and dehydration. The fundamental chemical and physical properties of foods, and their nutritive components, food additives and preservatives, and the principles of manufacture are discussed. Laboratory practice involves actual processing and preservation of various food products.

FOOD BIOCHEMISTRY. (Agriculture; Biochemistry and Nutrition 140.) Spring. Credit two hours. Given in odd numbered years. Prerequisite, Biochemistry and Nutrition 101. Lectures, M W 10. Savage 145. Professor ROBINSON and staff members from the Department of Food Science and Technology, N. Y. State Agricultural Experiment Station, Geneva, N. Y.†

A discussion of some of the important nonmicrobial changes in foods, such as denaturation and the Maillard browning reaction. Emphasis is placed on the occurrence, significance, and prevention or control of the changes as they affect the color, odor, flavor, texture, or nutritive value of foods.

FOOD BIOCHEMISTRY SEMINAR. (Agriculture; Biochemistry and Nutrition 294.) Fall. Credit one hour. Registration by permission. F 4:30. Savage 130. Professor BARNES and staff members from the Department of Food Science and Technology, N.Y. State Agricultural Experiment Station, Geneva, N.Y.

Assignments and discussions of literature pertaining to the biochemical aspects of foods and food processing.

DAIRY ENGINEERING. (Agriculture; Dairy Industry 130.) Fall. Credit five hours. Prerequisites, Physics 103 and 104 or the equivalent and course 1. Lectures, M W F 10. Laboratory, M W 2–4:30. Recitation to be arranged. Stocking 119. Associate Professor JORDAN and Mr. HOEFER.†

Engineering aspects of dairy-plant operations and a study of dairy-plant forms and records used in inventory control.

MEAT AND MEAT PRODUCTS. (Animal Husbandry 90.) Fall or spring. Credit three hours. Animal Husbandry 1 is recommended before registering for this course. Lecture, M 8. Fall term, Wing C; spring term, Wing A. Laboratory, M T or W 1–5. Registration limited to sixteen students in each section. Assistant Professor STOUFFER.†

A course in livestock slaughtering, retail meat cutting, live animals and carcass relationships, and the storage and preservation of meat and meat products. A one-day field trip to packing plants will be taken.

MEAT AND MEAT PRODUCTS. (Animal Husbandry 92.) Fall or spring. Credit two hours. For women students. Not open to freshmen. Designed primarily for students in the College of Home Economics. Registration limited to sixteen students in each laboratory section. Lecture, Th 11. Fall term, Wing E; spring term, Wing C. Laboratory, Th or F 2–4:20. Meat Laboratory. Professor WELLINGTON and the Poultry Department staff.†

The major phases of the study of meat, poultry, and eggs; wholesale and retail buying, nutritive value of meats, cutting, freezing, curing, canning, cooking, and miscellaneous topics.

POULTRY MEAT AND EGG TECHNOLOGY. (Agriculture; Poultry Husbandry 150.) Fall. Credit three hours. Given in alternate years. Prerequisites, Chemistry 303 or its equivalent and Bacteriology 1. Open to graduate students, juniors, and seniors. Lectures, T Th 9; Rice 100. Laboratory, M 2–4; Rice 101. Associate Professor BAKER.

Discussion and study of some of the important microbial and nonmicrobial

changes in poultry meat and eggs as well as the chemical composition and preservation of these products. Development of new products is also emphasized.

ELEMENTARY CHEMICAL ENGINEERING. (Engineering 5110.) Spring. Credit three hours. Primarily for students in agriculture or nutrition. Not open to students in chemical engineering. Prerequisites, Chemistry 102 or 106, Physics 104, and three years of high school mathematics or equivalent. Lectures, M W 10, F 8. Olin 158. Associate Professor FINN. Given in even numbered years.†

A general discussion of the fundamental operations and processes of chemical engineering, with particular emphasis on their applications in the food-processing industries. Among the topics discussed are the unit operations of evaporation, filtration, agitation, distillation, and drying, and the general design of food-processing plants.

ANALYTICAL METHODS. (Agriculture; Dairy Industry 111.) Spring. Credit four hours. Prerequisites, college physics and quantitative analysis. Lectures, T Th 11. Laboratory practice, T 1–5. Stocking 119. Professor HERRINGTON and assistant.†

A study of the more important operations and apparatus used in quantitative analysis, and their practical application.

CHEMISTRY OF MILK. (Agriculture; Dairy Industry 113.) Fall. Credit two hours. Prerequisites, qualitative and quantitative analysis and organic chemistry. Lectures, M W 8. Stocking 120. Professor HERRINGTON and Associate Professor SHIPE.†

The subject matter changes from year to year. It may deal with colloidal phenomena in milk and its products. It may deal with the enzymes of milk, with milk proteins, with milk fat, or with chemical reactions and equilibria in dairy products. Graduate students may re-register in successive years and find little duplication of material.

MARKET MILK. (Agriculture; Dairy Industry 102.) Spring. Credit five hours. Prerequisites, Introductory Dairy Science 1, and Bacteriology 1 or its equivalent. Lectures, M W 10. Laboratory, M W 2–5. Stocking 120. Professor HOLLAND, Associate Professor MARCH, and assistants.†

The scientific, technical, and sanitary aspects of the fluid-milk industry.

MILK-PRODUCTS MANUFACTURING. (Agriculture; Dairy Industry 103.) Fall. Credit five hours. Prerequisites, Dairy Industry 1, Bacteriology 1, and organic chemistry or biochemistry. T Th 11–4:30. Stocking 120. Professor KOSIKOWSKI and assistant.†

The principles and practice of making butter, cheese, and casein, including a study of the physical, chemical, and biological factors involved. Consideration is given also to commercial operations and dairy-plant management.

MILK-PRODUCTS MANUFACTURING. (Agriculture; Dairy Industry 104.) Spring. Credit five hours. Prerequisite, Dairy Industry 102. T Th 11–4:30. Stocking 119. Associate Professor JORDAN and assistant.†

The principles and practice of making condensed and evaporated milk, milk powders, ice cream, and by-products, including a study of the physical, chemical, and biological factors involved.

POSTHARVEST PHYSIOLOGY, HANDLING, AND STORAGE OF FRUITS. (Agriculture; Pomology 111.) Fall. Credit three hours. Prerequisite, Pomology 1 or 2. Lectures, T Th 8, Plant Science 143. Laboratory, Th or F 2–4:30, Plant Science 107. Professor SMOCK.†

The chemistry and physiology of fruits as they affect quality and marketability are studied. Handling methods, maturity indices, and storage practices are considered. Practical work involves grading and inspection of fruits and storage of fruit in different ways. One Saturday field trip is required.

POTATO PRODUCTION AND PROCESSING. (Agriculture; Vegetable Crops 22.) Spring. Credit three hours. Lectures, T Th 10, East Roberts 222. Laboratory, T or W 2–4:30, East Roberts 223. Professor SMITH.†

General principles and practical phases of potato production, storage, and processing are discussed. Growth processes and soil and environmental factors are emphasized as influencing production. Topics such as storage methods, grading, packaging, cooking quality, nutritive value, processing, and industrial uses of potatoes also are studied. Two field trips, one of which is all-day, are taken to potato farms and processing plants.

HANDLING AND MARKETING VEGETABLE CROPS, ADVANCED COURSE. (Agriculture; Vegetable Crops 112.) Fall. Credit four hours. Primarily for graduate students and those undergraduates who are specializing in marketing. Lectures, T Th 11, East Roberts 222. Laboratory, T or W 2–4:30, East Roberts 223. One-hour conference period, to be arranged. Professor HARTMAN.†

Students registered for the Tuesday laboratory are scheduled to go on a field trip at 9:30 a.m., Wednesday, September 23.

This course has the same lectures, laboratories, and field trips as Vegetable Crops 12. Much more outside reading of research publications in the field is required in Vegetable Crops 112 than in Vegetable Crops 12, and different examinations are given for the two courses.

RESEARCH METHODS IN VEGETABLE CROPS. (Agriculture; Vegetable Crops 225.) Spring. Credit four hours. Primarily for graduate students. Prerequisite, Vegetable Crops 101. It is recommended that Botany 231 and 232 precede or accompany this course. Lectures, M W F 9. Laboratory, M 2–4:30. East Roberts 223. Assistant Professor OYER.

A study of research techniques peculiar to vegetable crops, with a study of the literature and the solution of research problems.

VEGETABLE CROPS, ADVANCED COURSE. (Agriculture; Vegetable Crops 101.) Fall. Credit four hours. Prerequisites, Vegetable Crops 11 and Botany 31. Lectures, M W F 11. Laboratory, M 2–4:30. East Roberts 223. Assistant Professor OYER.

Devoted to a systematic study of the literature dealing with practices in vegetable production. Results of experiments that have been conducted or are being conducted are studied, and their application to the solution of practical problems is discussed.

FOOD PREPARATION

SCIENCE IN FOOD PREPARATION. (Home Economics; Food and Nutrition 314.) Fall. Credit three hours. Prerequisites, Food and Nutrition 215 and Biochemistry 10 or equivalent. Lecture, T Th 8, Van Rensselaer 339. Laboratory, S 9–11, Van Rensselaer 356 and 358. Professor PERSONIUS.†

Scientific principles underlying modern theory and practice in the preparation of batters, doughs, and starch-thickened products, and in egg and milk cookery. The relation to food preparation of the physical and chemical properties of fats, proteins, starches and leavening agents; colloidal systems—gels, sols, foams, and emulsions. Reading of original literature required. Laboratory studies of effect of varying ingredients, manipulation, and cooking conditions on quality of the product.

SCIENCE IN FOOD PREPARATION, INTRODUCTORY EXPERIMENTAL COOKERY. (Home Economics; Food and Nutrition 315.) Spring. Credit three hours. Prerequisite, Food and Nutrition 314, or equivalent. Lecture, T Th 9, Van Rensselaer 339. Laboratory, F 10–1, Van Rensselaer 356. Professor ———.†

Continuation of Food and Nutrition 314 with emphasis on meat, fruit, vegetable, and sugar cookery, and frozen desserts. The relation to food preparation of the physical and chemical properties of sugars, fruit and vegetable pigments and flavor constituents; properties of true solutions—solubility, boiling and freezing point, crystallization, palatability and retention of nutrients. Study of methods and techniques used in experimental work with food. Laboratories during the latter half of the semester will be devoted to independent work on a problem in food preparation.

MEATS, POULTRY, AND FISH. (Hotel Administration 206.) Fall and spring. Credit three hours. Associate Professor WANDERSTOCK.†

Deals with the major phases of meats, poultry, and fish from the hotel, restaurant, club, and institutional standpoint; nutritive value, sanitation, selection and purchasing, cutting, freezing, cooking, carving, and miscellaneous topics. Required three-day field trip to visit purveyors in New York City included. Estimated cost for this trip ranges between $30 and $40.

FOOD DEMONSTRATION. (Home Economics; Food and Nutrition 305.) Fall and spring. Credit two hours. Limited to 10 students. Prerequisite, Food and Nutrition 215. T Th 2:30–4. Van Rensselaer 352. Assistant Professor SNOW.

Purposes and techniques of demonstrations in relation to food preparation and nutrition, with application to teaching, extension, business, and social service. Field trips to nearby areas may be planned—total cost to students not to exceed $3.00.

READINGS IN FOOD. (Home Economics; Food and Nutrition 404.) Fall. Credit two hours. Prerequisite, Food and Nutrition 315, or equivalent. T Th 11. Room 301. Assistant Professor SNOW.†

Critical review of current literature. Emphasis on experimental data basic to the scientific principles underlying modern theory and practice in food preparation.

SEMINAR IN FOOD. (Home Economics; Food and Nutrition 421.) Spring. Credit one hour. T 4:30. Van Rensselaer 301. Department staff.

BACTERIOLOGY

DAIRY BACTERIOLOGY. (Agriculture; Bacteriology 101.) Spring. Credit three hours. Prerequisite, Bacteriology 1. Lectures, T Th 9, Stocking 119. Laboratory, T Th 10–12, Stocking 321. Professor NAYLOR and assistant.

A study of the microorganisms of importance in milk and milk products, with laboratory practice in the use of standard methods for microbiological testing and control of dairy products.

ADVANCED BACTERIOLOGY. (Agriculture; Bacteriology 103.) Spring. Credit six hours. Prerequisites, Bacteriology 1 and organic chemistry. Lectures and laboratory practice. M W F 2–5:30. Stocking 119. Professor MACDONALD and assistants.

A systematic study of certain important groups of bacteria, together with advanced cultural and isolation procedures, and other specialized techniques.

HIGHER BACTERIA AND RELATED MICROORGANISMS. (Agriculture; Bacteriology 105.) Fall. Credit four hours. Prerequisite, Bacteriology 1. Lectures, recitations, and laboratory practice, T Th 1:40–5. Stocking 119 and 321. Professor KNAYSI and assistant.

A study of the higher bacteria, together with the yeast and molds that are of especial importance to the bacteriologist.

PHYSIOLOGY OF BACTERIA. (Agriculture; Bacteriology 210.) Fall. Credit two hours. Prerequisites, Bacteriology 1 and at least one additional course in bacteriology and one in organic chemistry. Lectures, T Th 9. Stocking 120. Professor DELWICHE.

The physiology of bacteria and the biochemistry of microbic processes.

MORPHOLOGY AND CYTOLOGY OF BACTERIA. (Agriculture; Bacteriology 213.) Fall. Credit three hours. For seniors and graduate students. Lectures, T Th S 9. Stocking 119. Professor KNAYSI.

The morphology, cytology, and microchemistry of microorganisms.

CHEMISTRY OF BACTERIAL PROCESSES. (Agriculture; Bacteriology 215.) Spring. Credit two hours. For seniors and graduate students. Lectures, M W 11. Stocking 119. Professor DELWICHE.

The chemistry of metabolism, fermentation, and nutrition of microorganisms.

BIOCHEMISTRY

GENERAL BIOCHEMISTRY, LECTURE. (Agriculture; Biochemistry and Nutrition 101.) Fall. Credit four hours. Prerequisite, organic chemistry. Lectures, M W F S 8. Savage 100. Professor WILLIAMS.

For graduate and advanced undergraduate students, dealing with the chemistry of plant and animal substances and the reactions occurring in biological systems.

GENERAL BIOCHEMISTRY, LABORATORY. (Agriculture; Biochemistry and Nutrition 102.) Fall. Credit two hours. Prerequisite or parallel, Biochemistry and Nutrition 101, quantitative analysis. Laboratory, M W or T Th 2–4:20. Savage 230. Professor WILLIAMS and assistants.

Laboratory practice with plant and animal materials and the experimental study of their properties.

PHYSICAL ASPECTS OF BIOCHEMISTRY. (Agriculture; Biochemistry and Nutrition 110.) Fall. Credit two hours. Prerequisites, nine semester hours of college chemistry and introductory college physics or the equivalent. Intended for advanced undergraduates and graduate students in the biological sciences. Lectures, T Th 9, and an occasional hour by arrangement. Savage 145. Assistant Professor HESS.

A discussion of certain fundamental principles relating to matter and energy, properties of gases, liquids, and solutions, and chemical equilibrium which are helpful to an understanding of biological phenomena.

BIOCHEMISTRY AND NUTRITION OF THE VITAMINS. (Agriculture; Biochemistry and Nutrition 150.) Spring. Credit two hours. Offered in even numbered years. Prerequisites, Chemistry 303 and 305 or the equivalent, Biochemistry and Nutrition 101 or the equivalent, or Biochemistry and Nutrition 5 or 10 by permission. Primarily for graduate students. Professor DANIEL.*

The chemical, physiological, and nutritional aspects of the vitamins.

BIOGENESIS OF BIOLOGICALLY ACTIVE COMPOUNDS. (Agriculture; Biochemistry and Nutrition 160.) Fall. Credit two hours. Offered in odd numbered years. Prerequisite, Biochemistry and Nutrition 101 or the equivalent. Primarily for graduate students. Lectures, M W 9. Savage 145. Professor WRIGHT.

A consideration of the metabolic pathways by which certain structural and functional compounds of the cell originate.

BIOCHEMISTRY OF LIPIDS AND CARBOHYDRATES. (Agriculture; Biochemistry and Nutrition 201.) Spring. Credit two hours. Prerequisites, Biochemistry and Nutrition 101 and 102, and introductory physical chemistry or the equivalent. Lectures, M W 9, Savage 100. Professor NELSON.†

Discussion of the properties and biological role of the lipids and carbohydrates.

BIOCHEMISTRY OF PROTEINS AND ENZYMES. (Agriculture; Biochemistry and Nutrition 202.) Spring. Credit two hours. Prerequisites, Biochemistry and Nutrition 101 and 102 and introductory physical chemistry or the equivalent. Lectures, T Th 9. Savage 100. Assistant Professor HESS.†

A discussion of the chemical and biological aspects of proteins and enzymes.

ADVANCED BIOCHEMISTRY. Laboratory. (Agriculture; Biochemistry and Nutrition 203.) Spring. Credit three hours. Prerequisites, to accompany or follow Biochemistry and Nutrition 201 and 202. Limited enrollment. Registration by permission of the instructor only. M W 2–5. Savage 230. Professor NELSON and assistants.

Laboratory experiments dealing with enzymes, cofactors, and substrates of importance in metabolic processes. Practice is given in the use of special techniques employed in isolation, characterization, and mode of action of enzymes and enzyme systems. Emphasis is placed on interpretation of data and written reports covering the various experiments.

INTERMEDIARY METABOLISM. (Agriculture; Biochemistry and Nutrition 211.) Spring. Credit three hours. Prerequisites, courses 101, 102 and physical chemistry or the equivalent. Primarily for graduate students. Lectures, M W F 11. Savage 145. Associate Professor GIBBS.

The intermediary metabolism of carbohydrates, lipids, and amino acids. Specific topics include application of thermodynamics to biological systems, pathways of sugar metabolism, metabolism of fats and phospholipids, metabolism of amino acids, the chemistry of autotrophy including the reduction of inorganic ions and the hormonal control of metabolism.

BIOCHEMISTRY SEMINAR. (Agriculture; Biochemistry and Nutrition 290.) Fall and spring. Credit one hour. Registration by permission. F 4:15. Savage 145. Staff.

Assignments and discussions of recent advances in biochemistry.

CHEMISTRY AND PHYSICS

CHEMISTRY OF NATURAL PRODUCTS. (Arts and Sciences; Chemistry 395.) Fall. Credit two hours. Prerequisites, Chemistry 320 and 365–366. Primarily for graduate students. Lectures, T Th 9. Associate Professor MEINWALD.

Particular attention will be devoted to methods of structure determination as applied to selected terpenes, steroids, alkaloids, or antibiotics.

INTRODUCTORY PHYSICAL CHEMISTRY. (Arts and Sciences; Chemistry 403–404.) Throughout the year. Credit three hours a term. Prerequisites, Chemistry 224 and 308; Mathematics 163, 183, or 193; and Physics 118. Chemistry 403 is prerequisite to Chemistry 404. Required of candidates for the degree of B.Ch.E. Lectures, M W F 9. Professor SCHERAGA.

A systematic treatment of the fundamental principles of physical chemistry. The laws of thermodynamics and of the kinetic theory are applied in a study of the properties of gases, liquids and solids, thermochemistry, properties of solutions, and equilibrium in homogeneous and heterogeneous systems. Chemical kinetics and atomic and molecular structure are also studied.

INTRODUCTORY PHYSICAL CHEMISTRY. (Arts and Sciences; Chemistry 407–408.) Throughout the year. Credit three hours a term. Prerequisites, Mathematics 163, 183, or 193; Physics 107 and 108; and Chemistry 215 or 224; or consent of the instructor. Chemistry 407 is prerequisite to Chemistry 408. Required of candidates for the degree of A.B. with a major in chemistry. Lectures, M W F 10. Professor HOARD.

Elementary principles and methods of physical chemistry and their applications to the chemical and physical properties of matter. Specific topics include gases, liquids, solids, molecular structure, the laws of thermodynamics, solutions, physical and chemical equilibria, chemical kinetics, and electrochemical systems.

INTRODUCTORY PHYSICAL LABORATORY. (Arts and Sciences; Chemistry 411–412.) Throughout the year. Credit two hours a term. Prerequisite or parallel

course, Chemistry 403–404 or 407–408. Chemistry 411 is prerequisite to Chemistry 412. Enrollment may be limited. Required of candidates for the degrees of B.Ch.E. and A.B. with a major in chemistry. Laboratory, M T W Th or F 1:40–4:30; lecture-recitation, Th or F 12. Dr. WUNDERLICH and assistants.

Selected quantitative experiments both in classical and in modern physical chemistry. Experiments in homogeneous and in heterogeneous equilibria, electrochemistry, surface chemistry, reaction kinetics, nuclear chemistry, spectroscopy, and other branches of physical chemistry.

PHYSICAL CHEMISTRY OF PROTEINS. (Arts and Sciences; Chemistry 448.) Spring. Credit three hours. Prerequisite, Chemistry 404 or 408. Primarily for graduate students. Lectures, M W F 10. Professor SCHERAGA.

Chemical constitution, molecular weight, and structural basis of proteins; thermodynamic, hydrodynamic, optical, and electrical properties; protein and enzyme reactions. Given in alternate years.

PHYSICS FOR STUDENTS OF BIOLOGY. (Arts and Sciences; Physics 200.) Fall or spring. Credit three hours. Prerequisites, six semester hours of college work in each of the following: physics, chemistry, and biological science. Students having grades below 70 in Physics 103 and 104 should not elect this course. Lectures, T Th 12. Laboratory, T or F 2–4. Professor BARNES. Not given during spring term, 1959–1960.

Lectures and laboratory experiments dealing with such topics in molecular physics, electricity and magnetism, electromagnetic radiation, and nuclear physics as are related to the study of biology.

ECONOMICS

FOOD ECONOMICS. (Agriculture; Agricultural Economics 159.) Spring. Credit three hours. Designed especially for students in the Graduate School of Nutrition and in the College of Home Economics. Not open to students in the College of Agriculture except by permission of the instructor. Lectures and discussion, M W F 8. Savage 100. Professor DEGRAFF.†

Economic aspects of food, including production, distribution, and consumption, with special emphasis on the economics of diet.

MARKETING. (Agriculture; Agricultural Economics 140.) Fall or spring. Credit three hours. Lectures: fall, M W F 10; spring, M W F 11 except for weeks when field trips are taken, then M F lectures only. Warren 45. Field trips, T W or Th 1:30–5:30. Professor DARRAH.

A study of how farm products are marketed. Special attention is given to the consumption of farm products, the factors that affect consumption, production areas, market channels, the operation of different marketing agencies, marketing services, and costs. One all-day and five half-day trips are taken to visit marketing agencies.

SEMINAR IN FOOD AND POPULATION. (Agriculture; Agricultural Economics 250.) Spring. Credit two hours. Open only to graduate students. Registration by permission. W 7:30 p.m. Savage 130. Professor DEGRAFF.

Demographic behavior, population and food supply, comparative agriculture.

SURVEY OF INDUSTRIAL AND LABOR RELATIONS. (Industrial and Labor Relations 293.) Fall or spring. Credit three hours. Sec. 1, M W F 10; Sec. 2, M W F 12. Professor CAMPBELL. Not open to ILR students.

A survey for students in other divisions of the University. An analysis of the major problems in industrial and labor relations; labor union history organization, and operation; labor market analysis and employment practices; industrial and labor

legislation and social security; personnel management and human relations in industry; collective bargaining; mediation and arbitration; the rights and responsibilities of employers and employees; the major governmental agencies concerned with industrial and labor relations.

INSTITUTION ORGANIZATION AND ADMINISTRATION: PLANNING OF EQUIPMENT AND LAYOUT. (Home Economics; Institution Management 320.) Fall. Credit two hours. Primarily for seniors. Advised for all students specializing in institution management, dietetics, or school lunch supervision. Prerequisites, Institution Management 220 and 230. Hotel Administration 119 or Industrial and Labor Relations 461 is recommended to precede or parallel this course. M F 2. Van Rensselaer 124. Professor BLOETJES.

Analysis and interpretation of major administrative problems in operating a food service organization. Application of business management, budgetary, and production control principles to quantity meal preparation and service.

INDUSTRIAL ORGANIZATION AND MANAGEMENT. (Mechanical Engineering 3235.) Fall. Credit three hours a term. Three lectures a week.

Management of an industrial enterprise; internal organization; effect of type of product, methods of manufacture, size of enterprise, and personnel involved; types of enterprises; plant location; centralization and decentralization trends; diversification and specialization; growth of industry.

PERSONNEL MANAGEMENT. (Mechanical Engineering 3232.) Fall. Credit three hours. Three recitations a week. Intended for graduate students but open to qualified undergraduates. Prerequisite, Mechanical Engineering 3241 or permission.

Techniques of employee selection and evaluation, job evaluation, training, motivation; personnel department organization and interdepartmental relations.

MATHEMATICS

ANALYTIC GEOMETRY AND CALCULUS. (Arts and Sciences; Mathematics 161.) Fall or spring. Credit three hours. Prerequisites, trigonometry and intermediate algebra. Hours to be arranged.

Plane analytic geometry through conics. Differentiation and integration of polynomials with applications to rates, maxima, volumes, pressures, etc.

Courses 161–162–163 represent a standard three-term calculus sequence, presenting the main ideas and techniques of the calculus and analytic geometry; the material is so arranged that the first two terms (161–162) provide a reasonably complete introduction to the subject. This sequence of courses is not intended as preparatory to more advanced courses in mathematics, although admission to such courses can be obtained following this sequence by special permission. (For students who took the 161–162–163 sequence when it was the only one offered, this will continue to serve as the prerequisite to advanced work.) Students majoring in mathematics or in those physical sciences where mathematics is extensively used or who have special mathematical competence should elect the 182–183 sequence instead.

ANALYTIC GEOMETRY AND CALCULUS. (Arts and Sciences; Mathematics 162.) Fall or spring. Credit three hours. Prerequisite, Mathematics 161. Hours to be arranged.

Differentiation and integration of algebraic, trigonometric, logarithmic, and exponential functions, with applications. Related topics, including polar coordinates, parametric equations, and vectors.

ANALYTIC GEOMETRY AND CALCULUS. (Arts and Sciences; Mathematics 163.) Fall or spring. Credit three hours. Prerequisite, Mathematics 162 or 182. Hours to be arranged.

Infinite series, solid analytic geometry, partial derivatives, and multiple integrals.

STATISTICAL METHODS I.‡ (Agriculture; Plant Breeding 210.) Fall. Credit one, three, or four hours. Prerequisite, graduate standing or permission of instructor. T Th S 10. Warren 245. Laboratory to be arranged. Associate Professor STEEL.

The distributions of statistics encountered in biological and other fields are considered from the point of view of elementary probability notions and by sampling from known populations. The results, with principles of experimentation, are applied to the conduct of experiments and interpretation of results. The nature and validity of experimental error are treated. Topics include point and interval estimation, tests of hypotheses, the simpler experimental designs and their analyses of variance, linear regression and correlation, the treatment of discrete data.

STATISTICAL METHODS II.‡ (Agriculture; Plant Breeding 211.) Spring. Credit one, three, or four hours. Prerequisite, Plant Breeding 210 or the equivalent. T Th S 10. Warren 245. Laboratory to be arranged. Associate Professor STEEL.

The work of Plant Breeding 210 is continued. Topics include factorial experiments, individual degrees of freedom, analysis of covariance, analysis of variance of two-way classifications with disproportionate numbers, multiple and curvilinear regression, curve fitting, some recent developments in statistics.

ECONOMIC AND SOCIAL STATISTICS. (Industrial and Labor Relations 510.) Fall or spring. Credit three hours. T Th 2. Laboratory, F 3:30–5:30. Professor BLUMEN.

A nonmathematical course for graduate students in the social studies without previous training in statistical method. Emphasis will be placed on discussion of technical aspects of statistical analysis and on initiative in selecting and applying statistical methods to research problems. The subjects ordinarily covered will include analysis of frequency distributions, time series (including index numbers), regression and correlation analysis, and selected topics from the area of statistical inference.

PRINCIPLES OF INDUSTRIAL ACCOUNTING AND COST FINDING. (Mechanical Engineering 3231.) Fall and spring. Credit three hours. Two lectures and one computing period a week.

Basic course in the principles of industrial accounting including controlling accounts; special journals and ledgers; voucher system; manufacturing cost systems.

PHYSIOLOGY AND HISTOLOGY

PHYSIOLOGY. (Veterinary; Physiology 12.) Spring. Credit three hours. M W F 8. Professor DUKES.

Lectures and demonstrations on blood and lymph, circulation, respiration, digestion, and absorption.

PHYSIOLOGY. (Veterinary; Physiology 13.) Fall. Credit three hours. M T W 9. Professors DUKES, DYE, and DOUGHERTY.

Lectures and demonstrations on the muscular and nervous systems, senses, excretion, metabolism, temperature regulation, endocrine organs, and reproduction.

EXPERIMENTAL PHYSIOLOGY. (Veterinary; Physiology 14.) Fall. Credit three hours. For nonveterinary students registration is by permission. Laboratory, Th 8:30–11, F 8–1; or W 10–12:30, S 8–1. Associate Professor NANGERONI and assistants.

Special emphasis is placed on mammalian physiology.

ADVANCED EXPERIMENTAL PHYSIOLOGY. (Veterinary; Physiology 16.) Spring. Credit two hours. Prerequisites, Physiology 12 or 13 or its equivalent, and Physiology 14 or its equivalent. Registration by permission. Laboratory, F 9–1. Associate Professor NANGERONI and collaborators.

‡An additional hour per week is devoted to algebraic derivations and manipulations associated with the statistical techniques and computational procedures of the lectures and laboratory. The purpose is to give the student a better understanding of statistics and to improve his background for further work in statistics, such as Plant Breeding 213. This additional hour may be taken for one hour credit with or without the regular three hours credit.

COMPARATIVE PHYSIOLOGY. (Arts and Sciences; Zoology 451.) Fall. Credit four hours. Prerequisites, one year of biology or zoology and college courses in chemistry. Organic chemistry is also desirable. Lectures, M W F 9. Laboratory, M T W Th F 1:40–4:50 or S 8:00–11:10. Professor SCHNEIDERMAN.

The principal physiological functions of both vertebrates and invertebrates, including muscle contraction, nerve action, respiration, metabolism, digestion, circulation, excretion, endocrine action, and physiological regulation.

COMPARATIVE PHYSIOLOGY LECTURES. (Arts and Sciences; Zoology 451 A.) Fall. Credit three hours. Lectures, M W F 9. Professor SCHNEIDERMAN. Prerequisites, one year of biology or zoology, and college courses in chemistry. Open only to students who are *not* majoring in zoology.

The lecture part of Zoology 451.

GENERAL AND CELLULAR PHYSIOLOGY. (Arts and Sciences; Zoology 452.) Spring. Credit four hours. Prerequisites, animal or plant physiology, organic chemistry, physics, and permission of the instructor. Biochemistry and histology, genetics or cytology, are also desirable. Enrollment is limited. Lectures, M W 12. Seminar and laboratory, T W or T Th 1:40–5. Professor SCHNEIDERMAN.

An introduction to basic problems and methods of cellular physiology including physicochemical properties of protoplasm, function of cell organelles, role of nucleic acids, virus reproduction, permeability and active transport, growth, respiration, metabolism, and effects of ionizing radiation. The laboratory is designed to familiarize the student with basic techniques currently employed in physiological investigations, notably manometric and spectrophotometric methods, radioactive tracer technique, isolation of intracellular components, identification of enzyme systems, use of ultraviolet and x-irradiation, tissue culture, microsurgery, immunological methods.

GENERAL AND CELLULAR PHYSIOLOGY LECTURES. (Arts and Sciences; Zoology 454.) Spring. Credit three hours. Lecture, M W 12. Professor SCHNEIDERMAN. Prerequisite, Organic Chemistry. Zoology 451 *or* Zoology 301 *or* Plant Physiology is also desirable. This course consists of the lecture part of Zoology 452.

FUNDAMENTALS OF ENDOCRINOLOGY. (Agriculture; Animal Husbandry 127.) Fall. Credit three hours. Lectures, T Th 10. Wing C. Laboratory to be arranged. Associate Professor HANSEL.

A general course in the physiology of the endocrine glands, and the roles played by each hormone in the regulation of normal body processes. The laboratory work is designed to illustrate the basic principles of endocrinology and their applications to more efficient production in all classes of livestock.

PHYSIOLOGY OF REPRODUCTION. (Agriculture; Animal Husbandry 125.) Spring. Credit two hours. Open to graduate students and upperclassmen. Prerequisite, a course in human or veterinary physiology. Lectures, M W 10. Wing C. Professor ASDELL.

An advanced course in reproduction, principally in mammals.

ENDOCRINOLOGY AND METABOLISM. (Veterinary; Physiology 305.) Fall. Credit three hours. Prerequisites, six or more hours of biology, and a previous or parallel course in organic chemistry. Open to upperclassmen and graduate students. M W F 8. Professor DYE.

A study of intermediary metabolism, endocrinology, and reproduction. Illustrated lectures.

HISTOLOGY: THE BIOLOGY AND DEVELOPMENT OF THE TISSUES. (Arts and Sciences; Zoology 301.) Fall. Credit four hours. Prerequisites, Zoology 101–102, or 103–104, and 211–212. Lectures, T Th 11. Laboratory, T Th 8–10:30 or 2–4:30. Professor WIMSATT and assistants.

A survey of the structure, functions, and development of the tissues. The treatment is general, designed to provide students of biology with a basis for the understanding of normal and abnormal structure of the vertebrates. Each student will make for his own use a series of typical microscopic preparations.

SPECIAL HISTOLOGY: THE BIOLOGY OF THE ORGANS. (Arts and Sciences; Zoology 302.) Spring. Credit four hours. Prerequisite, Zoology 301. Enrollment limited to 25 students. Lectures, W F 9. Laboratory, W F 2–4:30. Professor WIMSATT and assistants.

A continuation of Zoology 301. Zoology 301 and 302 together give the fundamental facts of the microscopic structure, function, and development of the body. Opportunity to gain knowledge of technique in the fixing, embedding, and sectioning of selected organs is also offered.

SOCIAL STUDIES

THE SOCIOLOGY OF SOCIAL WORK. (Agriculture; Rural Sociology 124.) Fall. Credit three hours. Not open to freshmen or sophomores. Prerequisites, one course in sociology and one course in psychology. Lectures and discussions, M W F 9. Warren 260. Associate Professor TAIETZ.

A study of the structure and function of social work in the context of the dominant values in American society. The characteristics of the clientele, personnel, goals and problem-solving methods of social work are analyzed by means of pertinent sociological concepts and research.

PSYCHODYNAMICS OF PERSONALITY. (Home Economics; Child Development and Family Relationships 360.) Fall. Credit three hours. Prerequisite, Child Development 315 or Rural Education 111 or Psychology 103. Open to juniors and seniors; graduate students admitted by permission of the instructor. Limited to forty-five students. M W F 11. Van Rensselaer 124. Professor DALTON.

Psychological influences in the development and functioning of persons. Special attention will be given to basic determinants of personality; structure of the personality; personality in social and cultural context; the influence of conscious and unconscious processes in behavior.

RURAL COMMUNITY ORGANIZATION. (Agriculture; Rural Sociology 111.) Fall. Credit three hours. Prerequisite, Rural Sociology 1 or 12 or permission of the instructor. T Th 11–12:30. Warren 31. Associate Professor REEDER.

A consideration of the problems involved in helping people and organizations in a community work together to meet their common needs.

Problems which arise in helping schools, churches, farm organizations, and civic groups in integrating themselves into the life of the community are one part of this consideration. Students are given the opportunity to practice some organization techniques which have been found successful in community organization work.

THE NATURE OF MAN: CULTURE AND PERSONALITY. (Arts and Sciences; Sociology and Anthropology 204.) Spring. Credit three hours. Prerequisites, one of the following: Zoology 201 (or equivalent), a course in psychology (preferably Psychology 203), sociology and anthropology, child development and family relationships, or consent of instructors. M W F 10. Professors HOLMBERG and OPLER.

A study of the individual in his society, emphasizing the relationship between social structure, cultural context, and human behavior. Attention is given largely to the study of personality, "normal" and "abnormal," in non-Western societies.

This is one of three interdepartmental courses dealing with the nature of man from the perspectives of the biological and behavioral sciences. The other courses in

the series are Zoology 201 and Psychology 203. These courses may be taken singly or in any order.

NATIVE CULTURES OF THE NEW WORLD: NORTH AMERICA. (Arts and Sciences; Sociology and Anthropology 603.) Fall. Credit three hours. M W F 11. Assistant Professor SMITH.

A survey of representative Indian cultures from the Eskimo of the Arctic to the Aztec of Mexico, dealing with the economic, political, and social organization, the religion, and the arts of the more important groups; American Indian origins, prehistoric movements into the New World, subsequent cultural developments, and current problems of Indian administration in the United States.

NATIVE CULTURES OF THE NEW WORLD: MIDDLE AND SOUTH AMERICA. (Arts and Sciences; Sociology and Anthropology 604.) Spring. Credit three hours. M W F 11. Professor HOLMBERG.

A survey of the high civilizations and other representative aboriginal cultures from the Maya to Tierra del Fuego, and of their history before the European conquest and in more recent times.

[*NATIVE CULTURES OF ASIA AND THE PACIFIC: SOUTH ASIA AND OCEANIA.* (Arts and Sciences; Sociology and Anthropology 605.) Fall. Credit three hours. M W F 2. Professor SHARP. Not offered in 1959–1960.]

[*NATIVE CULTURES OF ASIA AND THE PACIFIC: EAST ASIA.* (Arts and Sciences; Sociology and Anthropology, 606.) Spring. Credit three hours. M W F 2. Assistant Professor SMITH. Not offered in 1959–1960.]

CASE STUDIES IN APPLIED ANTHROPOLOGY. (Arts and Sciences; Sociology and Anthropology 420.) Fall. Credit three hours. Prerequisite, consent of instructor. Th 2–4. Professor HOLMBERG and staff.

Designed for advanced undergraduate or graduate students in engineering, agriculture, nutrition, or the social sciences who are concerned with the modernization of economically underdeveloped regions of the world. Analysis of selected cases involving technological or other cultural change, of the reactions of participants, and of the validity of general principles of human behavior applied to these situations.

RESEARCH

SPECIAL PROBLEM. (Graduate School of Nutrition 199.) Credit variable. Report on individual problem under direction of any member of the faculty of the Graduate School of Nutrition. See page 13 for details.